Chemical composition and essential oil content of parsley submitted to the hygienizing and drying process

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Keywords: *Petroselinum crispum*, processing, essential oil.

Parsley [*Petroselinum crispum* (Mill) Nym.], Apiaceae family, is an aromatic herb that is cultivated worldwide and can be used fresh or dried, in the culinary, cosmetic and pharmaceutical industries, to produce spice, perfumes, creams, soaps and drugs. The strong flavor of parsley is derivative from its oil content. The main components of essential oil are apiol and myristicin. The aim of this study was evaluate the effects of cleaning and drying parsley leaves on the content and quality of its essential oil. The herbs used were cultivated by farmers at the southern state of Rio de Janeiro, Brazil. Two cases were examined, as follows: The A case, which leaves did not undergo by the cleaning process and the B case, which leaves were clean in water and sanitized with 200 ppm of sodium hypochlorite for 15 minutes. Parsley from the two processes were uniformly distributed on a thin layer and dried at different air temperatures (40°, 50° and 60°C) in an electric dryer tray. The drying process was completed when the product reached a water content of 0.11 d.b. The essential oil of the leaves was extracted using a Clevenger apparatus and quantified based on dry matter. The identification and quantification of chemical compounds were performed using the gas chromatography. The data were submitted to the *variance analysis* and the *average was compared* by *Tukey's test at 5% probability, compared the treatments with the fresh herb from each case.* The average drying time was 40 (40°C), 24 (50°C) and 14 hours (60°C). The essential oil content was 0.3024%, 0.3623%, 0.3202% and 0.3382%, for fresh leaves dried at 40°, 50° e 60°C, respectively at the A process and 0.179%, 0.164%, 0.138% and 0.179%, fresh leaves dried at 40°, 50°and 60°C, respectively at the B process. The lowest essential oil content of the samples was obtained at the B process. The difference is because the plants were taken at different times, in a 2-month interval, February (A) and April (B). On both cases there was a higher essential oil content compared to the fresh herb when they were subjected to drying at 40°C, however, there was no statistically significant difference between the treatments. Apiol and myristicin were the major components of the essential oil, corresponding to 70% of the total composition. There was no statistical difference for myristicin content at A process, as follows in percent: 23.05^{a} (fresh), 21.11^{a} (40°C), 23.01^{a} (50°C) and 20.64^{a} (60°C). At B process, a statistical difference was observed between all the treatments: 31.97^{a} (fresh), 23.20^{b} (40°C), 28.90^{c} (50°C) and 26.14^{d} (60°C). For apiole content, after the A process, a significant loss on drying at 60°C was observed for all treatments (in %): 40.42^{a} (fresh), 42.41^{a} (40°C), 41.48^{a} (50°C) and 34.45^{b} (60°C). Considering apiole content after process B, no significant difference between fresh and dried plant samples was recorded: 47.93^{a} (fresh), 49.56^{a} (40°C) 46.56^{a} (50°C) and 46.67^{a} (60°C). The significant differences between the temperatures studied lead us to consider the temperature of 50°C as the indicated for preservation of the main components at the two processes, but even with the statistical results and considering the time required to perform the drying process, that at 60°C is reduced at cost and yield of essential oil equivalent to the other treatments, letting the best temperature option be chosen by the producer and/or company based on the marketing.

Acknowledgements: FAPERJ, UFF.

ISBN: 978-85-66836-11-0